The 35 U.S.C. §102 Rejections

The Examiner rejected claims 1-4, 7, and 8 under 35 U.S.C. §102(e) as being anticipated by Senzaki et al. (U.S. Patent No. 6,503,561).

The Examiner rejected claim 25 under 35 U.S.C. §102(e) as being anticipated by Toyoda et al. (U.S. Patent No. 6,001,461).

Applicant respectfully traverses these rejections.

Claims 1-4, 7, and 8 are not anticipated under 35 U.S.C. §102(e) by Senzaki et al.

For a claim to be anticipated under 35 U.S.C. §102, each and every element of the claim must be found in a single prior art reference (M.P.E.P. §2131). Furthermore, "[i]n determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure' . . ." (M.P.E.P. §2121.01, quoting *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596, 600 (CCPA 1968)). Applicant asserts that Senzaki et al. do not contain an enabling disclosure with respect to independent claims 1 and 7 and to claims 2-4 and 8 dependent thereto.

It is settled that to provide an enabling disclosure, an application must include "adequate direction which reasonably would lead persons skilled in the art" to the claimed invention (In re Edwards, 568 F.2d 1349, 1352, 196 USPQ 465, 467 (CCPA 1978)). This concept was articulated in *In re Ruschig* as follows:

> "It is an old custom in the woods to mark trails by making blaze marks on the trees. It is no help in finding a trail . . . to be confronted simply by a large number of unmarked trees. Appellants are pointing to trees. We are looking for blaze marks which single out particular trees. We see none."

(379 F.2d 990, 994-995, 154 USPQ 118, 122 (CCPA 1967). Thus, the disclosure must provide a guide directing one skilled in the art to the claimed invention. *Id.*

It was further found in *Fujikawa v. Wattanasin* that a disclosure failed to sufficiently describe a proposed sub-genus where the sub-genus was not preferred, and that the application "contained no blazemarks as to what compounds, other than those disclosed as preferred, might be of special interest. In the absence of such blazemarks, simply describing a large genus of compounds is not sufficient" (93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (CAFC 1996), citing to *In re Ruschig*, 379 F.2d at 994, 154 USPQ at 122 ("Specific claims to single compounds require reasonably specific supporting disclosure and while . . . *naming* [each species] is not essential, something more than the disclosure of a class of 1000, or 100, or even 48 compounds is required.")).

Furthermore, "just because a moiety is listed as one possible choice for one position does not mean there is *ipsis verbis* support for every species or sub-genus that chooses that moiety. Were this the case, a 'laundry list' disclosure of every possible moiety for every possible position would constitute a written description of every species in the genus. This cannot be because such a disclosure would not 'reasonably lead' those skilled in the art to any particular species." (*Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (CAFC 1996)).

Applicant's independent claims 1 and 7 both recite methods wherein a precursor composition comprising one or more zirconium complexes and a precursor composition comprising one or more platinum complexes are provided to a substrate to form a platinum-zirconium-containing film on the substrate. Senzaki et al. provide no disclosure that would reasonably lead one skilled in the art to select a precursor composition comprising one or more zirconium complexes and a precursor composition comprising one or more platinum complexes and to provide these precursor compositions to a substrate to form a platinum-zirconium-containing film thereon.

Senzaki et al. disclose a process for deposition of multiple metal or metal compound layer on a substrate that includes providing a solventless mixture of two or more metal-ligand complex precursors (Senzaki et al., col. 2, lines 62-66). "The metal of the metal ligand precursor [of Senzaki et al.] can be one or more of: zinc, cadmium, mercury, aluminum, germanium, gallium, indium, thallium, tin, lead, antimony, bismuth, lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, barium, scandium, yttrium, lanthanum, titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, manganese, technetium, rhenium, iron, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, gold, silicon, and cerium (Senzaki et al., col. 6, lines 52-61). Senzaki et al. provide no "blaze marks" to motivate one skilled in the art to select the combination of a zirconium-containing precursor composition and a platinum-containing precursor composition, according to Applicant's invention, in preference to any other combination of the listed metals. In fact, "[E]xemplary solventless mixtures of at least two metal-ligand complex precursors" of Senzaki et al. include:

zirconium-tin-titanium;
tantalum-titanium;
aluminum-tantalum; and
silicon with one of: titanium, zirconium, hafnium, vanadium, niobium, tungsten, molybdenum, and tantalum.

(Senzaki et al., col. 7, lines 24-38 and Examples 1-11), none of which disclose a zirconium-containing precursor composition and a platinum-containing precursor composition, as claimed by Applicant.

The Examiner has cited a Board of Patent Appeals and Interferences opinion (*Ex parte A*, 17 USPQ2d 1716 (1990)) in support of the assertion that Senzaki et al. disclose Applicant's claims 1-4, 7, and 8. Applicant points out, however, that in *Ex parte A*, "appellants' thesis is that their compound is unexpectedly and significantly superior against anaerobic bacteria" (*Id.*, at 1719) while the document asserted to anticipate their invention (the claim reciting "an antibacterial pharmaceutical composition") described compounds disclosed as having, *inter alia*, "antibacterial activity" (*Id.*, at 1718-1719). Applicant asserts that the present application is distinguished from *Ex parte A* for at least the reason that in *Ex parte A*, the cited reference may be considered to have provided "blazemarks" to select a compound having antibacterial activity, while, on the other hand, Senzaki et al. provide no such direction or motivation whatsoever to select the combination of a zirconium-containing precursor compound and a platinum-containing precursor compound as recited in Applicant's claims 1-4, 7, and 8 in preference to any other listed precursor, and in particular in preference to any of the exemplary metal-ligand complex precursors taught by Senzaki et al.

Thus, for at least the above reasons, Applicant submits that claims 1-4, 7, and 8 are not anticipated by Senzaki et al. Reconsideration and withdrawal of the rejection are, therefore, respectfully requested.

Claims 25 is not anticipated under 35 U.S.C. §102(e) by Toyoda et al.

For a claim to be anticipated under 35 U.S.C. §102, each and every element of the claim must be found in a single prior art reference (M.P.E.P. §2131). Applicant submits that Toyoda et al. fail to disclose each and every element of claim 25.

> Claim 25 recites a method for fabricating a capacitor comprising:
>
> forming a first conductive layer;
> forming a dielectric layer directly on at least a portion of the first conductive layer; and
> forming a second conductive layer on the dielectric layer;
> wherein at least one of the first and second conductive layers comprises a platinum-zirconium film.

Initially, Applicant respectfully points out that Applicant believes that the Examiner has mischaracterized Applicant's argument with respect to Toyoda et al. presented in the Amendment and Response filed herein on June 28, 2004. In the present Final Office Action at page 9, lines 17-18, the Examiner asserts that "applicant alleges that Toyoda et al. fails to disclose the limitations of fabricating a capacitor." Applicant respectfully points out that Applicant commented in the Amendment and Response filed June 28, 2004 at page 11, lines 15-19, that "in no instance do Toyoda et al. teach a method for fabricating a capacitor **that includes forming a first conductive layer; forming a dielectric layer directly on at least a portion of the first conductive layer; and forming a second conductive layer on the dielectric layer, wherein at least one of the first and second conductive layers includes a platinum-zirconium film, as recited in Applicant's claim 25**" (emphasis added).

The Examiner contends that Example 14 includes all the limitations of claim 25. Applicant disagrees.

Example 14, referring to Figure 16, disclose an embodiment of Toyoda et al. wherein a silicon wafer (1) with a thermal oxide film (5) form a substrate, on which a platinum-zirconium amorphous film (3) is formed. A platinum film (33) is formed on the platinum-zirconium layer (3), and a strontium titanate dielectric thin film (34) is formed on the platinum film (33). Finally, a gold film (35) is formed on the dielectric layer. Thus, in this example, the strontium titanate dielectric layer is formed directly on the platinum film (i.e., the "first conductive layer"), and not directly on the platinum-zirconium film layer. Furthermore, the conductive layer formed on the dielectric layer (i.e., the "second conductive layer") is gold, not a platinum-zirconium film.

For at least the above reasons, Applicant asserts that Toyoda et al. fail to teach each and every element of Applicant's claim 25 and, therefore, Toyoda et al. fail to anticipate claim 25. Reconsideration and withdrawal of the rejection are respectfully requested.

The 35 U.S.C. §103 Rejections

The Examiner rejected claims 5 and 9 under 35 U.S.C. §103(a) as being unpatentable over Senzaki et al. (U.S. Patent No. 6,503,561) in view of Kirlin et al. (U.S. Patent No. 5,840,897).

The Examiner rejected claims 6 and 10 under 35 U.S.C. §103(a) as being unpatentable Senzaki et al. (U.S. Patent No. 6,503,561) in view of Desu et al. (U.S. Patent No. 5,431,958).

Applicant respectfully traverses these rejections.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success.

Finally the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. §2143.

Claims 5 and 9 are not obvious under 35 U.S.C. §103(a) over Senzaki et al. in view of Kirlin et al.

For at least the reasons discussed, *supra*, Applicant asserts that Senzaki et al. fail to anticipate Applicant's independent claims 1 and 7, as well as any claims dependent thereto. Applicant further asserts that Kirlin et al. fail to provide that which is missing from Senzaki et al. to arrive at Applicant's claims 5 and 9.

As discussed in Applicant's Amendment and Response filed herein on June 28, 2004, Kirlin et al. disclose a metalorganic complex of the formula MA_yX, wherein the metal may be selected from a group of 52 possible metals (Kirlin et al., Abstract), including platinum and zirconium, the metals selected from Groups 1-6, 8-11, 13-15, the Lanthanide Series, and the Actinide Series of the Periodic Table. For similar reasons as discussed, *supra*, with respect to Senzaki et al., Applicant asserts that there is no disclosure in Kirlin et al. whatsoever that would provide the required "blazemarks" to one skilled in the art to select the combination of platinum and zirconium precursors or to form a platinum-zirconium containing film. Kirlin et al. disclose several metal source reagents/compounds (Tables I-VI) and metal containing films (table IV), as well as 47 examples, none of which include platinum, let alone a method including providing a precursor composition including one or more zirconium complexes and a precursor composition including one or more platinum complexes whereby a platinum-zirconium containing film is formed.

Applicant asserts, therefore, that Kirlin et al. fail to provide that which is missing from the disclosure of Senzaki et al., and for at least that reason, the combination of Senzaki et al. and Kirlin et al. fail to provide a *prima facie* case of obviousness over the rejected claims 5 and 9.

Claims 6 and 10 are not obvious under 35 U.S.C. §103(a) over Senzaki et al. in view of Desu et al.

For at least the reasons discussed, *supra*, Applicant asserts that Senzaki et al. fail to teach provision of a precursor composition comprising one or more zirconium containing complexes and a precursor composition comprising one or more platinum containing complexes, and forming a platinum-zirconium-containing film, as recited in Applicant's independent claims 1 and 7, as well as claims dependent thereto. Applicant further asserts that Desu et al. fail to provide that which is missing from Senzaki et al. to arrive at Applicant's claims 6 and 10.

As discussed in Applicant's Amendment and Response filed herein on June 28, 2004, Desu et al. neither teach nor suggest either a platinum precursor complex or forming a platinum-zirconium-containing film. Thus, Desu et al. fail to provide that which is missing from Senzaki et al.

For at least this reason, Applicant asserts that the Examiner has not made a *prima facie* case of obviousness with the combination of Senzaki et al. and Desu et al. in the rejection of claims 6 and 10.

Reconsideration and withdrawal of the rejections of claims 5, 6, 9, and 10 are respectfully requested.

The Examiner rejected claims 26 and 31 under 35 U.S.C. §103(a) as being unpatentable over Toyoda et al. (U.S. Patent No. 6,001,461) in view of Miedema et al. (U.S. Patent No. 5,104,848).

The Examiner rejected claim 27 under 35 U.S.C. §103(a) as being unpatentable over Toyoda et al. (U.S. Patent No. 6,001,461) and Miedema et al. (U.S. Patent No. 5,104,848), and further in view of Senzaki et al. (U.S. Patent No. 6,503,561).

The Examiner rejected claims 28 and 29 under 35 U.S.C. §103(a) as being unpatentable over Toyoda et al. (U.S. Patent No. 6,001,461), Senzaki et al. (U.S. Patent No.

6,503,561), and Miedema et al. (U.S. Patent No. 5,104,848), and further in view of Kirlin et al. (U.S. Patent No. 5,840,897).

The Examiner rejected claim 30 under 35 U.S.C. §103(a) as being unpatentable over Toyoda et al. (U.S. Patent No. 6,001,461), Senzaki et al. (U.S. Patent No. 6,503,561), and Miedema et al. (U.S. Patent No. 5,104,848), and further in view of Desu et al. (U.S. Patent No. 5,431,958).

Applicant respectfully traverses these rejections.

Claims 26 and 31 are not obvious under 35 U.S.C. §103(a) over Toyoda et al. in view of Miedema et al.;
Claim 27 is not obvious under 35 U.S.C. §103(a) over Toyoda et al. and Miedema et al., and further in view of Senzaki et al.;
Claims 28 and 29 are not obvious under 35 U.S.C. §103(a) over Toyoda et al., Senzaki et al. and Miedema et al., and further in view of Kirlin et al.; and
Claim 30 is not obvious under 35 U.S.C. §103(a) over Toyoda et al., Senzaki et al. and Miedema et al., and further in view of Desu et al.

As discussed, *supra*, as Toyoda et al. do not teach the method of Applicant's claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer, wherein at least one of the first and second conductive layers comprises a platinum-zirconium film. Furthermore, neither Miedema et al. Senzaki et al., Kirlin et al., nor Desu et al. provide that which is missing from Toyoda et al.

As discussed in Applicant's Amendment and Response filed herein on June 28, 2004, Applicant maintains that while Miedema et al. may include a platinum-zirconium amorphous alloy, they fail to teach a dielectric layer as recited in Applicant's claim 25. Further, the Examiner has not pointed out where in Miedema et al. the deficiencies of Toyoda et al. are provided. It is, therefore, asserted that claims 26 and 31 are nonobvious over Toyoda et al. in view of Miedema et al.

Additionally, as discussed, *supra*, and in Applicant's Amendment and Response filed June 28, 2004, Senzaki et al. fail to teach a platinum-zirconium film and, further, also fail to teach the method of claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer. In fact, neither the specification nor the examples of Senzaki et al. teach or suggest a dielectric layer at all. It is, therefore, asserted that Senzaki et al. fail to provide that which is missing from the combination of Toyoda et al. and Miedema et al. to arrive at Applicant's claim 27. Thus, claim 27 is nonobvious over Toyoda et al. in view of Miedema et al. and Senzaki et al.

It is also asserted that Kirlin et al. fail to provide that which is missing from Toyoda et al., Senzaki et al., and Miedema et al. to arrive at Applicant's claims 28 and 29.

As discussed, *supra*, as well as in Applicant's Amendment and Response filed June 28, 2004, Kirlin et al. fail to teach the formation of a platinum-zirconium film. Furthermore, Kirlin et al. fail to teach or suggest, in either the specification or examples. formation of a dielectric layer, much less the method of claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer. It is, therefore, asserted that claims 28 and 29, dependent from claim 25 are, for at least the above reasons, nonobvious over Toyoda et al. in view of Senzaki et al., Miedema et al, and further in view of Kirlin et al.

Finally, Applicant asserts that Desu et al. fail to provide that which is missing from Toyoda et al., Senzaki et al., and Miedema et al. to arrive at Applicant's claim 30.

For reasons stated, *supra*, neither Toyoda et al., nor Toyoda et al in combination with Miedema et al. or with Miedema et al. and Senzaki et al. provide Applicant's claim 25. Desu et al. also fail to provide that which is missing.

As discussed herein and in Applicant's Amendment and Response filed June 28, 2004, Desu et al. fail to teach or suggest formation of a platinum-zirconium film. Furthermore, Desu et al. fail to teach or suggest, in either the specification or examples, formation of a dielectric layer at all, much less the method of claim 25 wherein a first conductive layer is formed, a dielectric layer is formed directly on at least a portion of the first conductive layer, and a second conductive layer is formed on the dielectric layer. It is, therefore, asserted that claims 28 and 29, dependent from claim 25 are, for at least the above reasons, nonobvious over Toyoda et al. in view of Senzaki et al., Miedema et al, and further in view of Desu et al.

For at least the above reasons, Applicant asserts that claims 26-30 are nonobvious over the art cited herein. In addition, Applicant maintains that the rejection of, in particular, claims 28-30 requiring the combination of 4 separate documents, could only be made by the use of hindsight reconstruction. The use of hindsight reconstruction is improper (one cannot "simply [to] engage in a hindsight reconstruction of the claimed invention, using the Applicant's structure as a template and selecting elements from references to fill the gaps." In re Gorman, 933 F.2d 982, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991)), and Applicant asserts that the need to use 4 separate documents provides evidence that the Examiner's rejections were made using impermissible hindsight reconstruction.

For at least the above reasons, reconsideration and withdrawal of the rejections of claims 26-31 are respectfully requested.

The Examiner rejected claims 32-33 under 35 U.S.C. §103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,509,601) in view of Senzaki et al. (U.S. Patent No. 6,503,561).

The Examiner rejected claims 34-37 under 35 U.S.C. §103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,509,601) and Senzaki et al. (U.S. Patent No. 6,503,561), and further in view of Tani et al. (U.S. Patent No. 6,600,185).

Applicant respectfully traverses these rejections.

Claims 32-33 are not obvious under 35 U.S.C. §103(a) over Lee et al. in view of Senzaki et al.

Independent claim 32 recites a method for fabricating a capacitor having a first and a second electrode, including: providing a substrate; forming an insulative layer overlying a substrate; forming an opening in the insulative layer to expose the substrate; forming a conductive plug in the opening, the conductive plug forming a first portion of the first electrode of the capacitor, the conductive plug recessed below a surface of the insulative layer; forming a first conductive layer in the opening and overlying the conductive plug such that the first conductive layer is surrounded on sidewalls by the insulative layer, the first conductive layer forming a second portion of the first electrode, the first conductive layer being formed of a platinum-zirconium film; and forming a second conductive layer overlying the first conductive layer, the second conductive layer forming a third portion of the first electrode. As admitted by the Examiner (Final Office Action, page 7, lines 10-11), Lee et al. fail to teach a conductive layer formed of a platinum-zirconium film. For the reasons discussed, *supra*, Senzaki et al. also fail to teach a platinum-zirconium film. Thus, Senzaki et al. fail to provide that which is missing from Lee et al., and the combination of Lee et al. with Senzaki et al. fails to teach each and every element of Applicant's claim 32 and claim 33 dependent thereto.

Claims 34-37 are not obvious under 35 U.S.C. §103(a) over Lee et al. and Senzaki et al., and further in view of Tani et al.

For reasons discussed, *supra*, Applicant asserts that claims 32 and 33 are nonobvious over the combination of Lee et al. in view of Senzaki et al. Furthermore, Tani et al. fail to provide that which is missing from the above combination to provide the embodiment of claims 34-37, dependent directly or ultimately from claims 32 and 33.

Tani et al. disclose a ferroelectric capacitor having a top electrode, a bottom electrode, a ferroelectric body disposed between the top and bottom electrodes, and a dielectric lining disposed below the top electrode and above the bottom electrode (Tani et al. Abstract). Tani et al. disclose certain conductive layers, including iridium oxide (col. 4, lines 18-20), platinum, and iridium (col. 6, lines 39-40), but fail to teach or suggest a conductive layer formed